DSGN 2006

Building Code for Interior Design

unit learning objectives

At the end of this unit, students will be able to:

discuss when barrier-free provisions apply to a building or suite within different occupancies,

determine accessibility including AODA requirements external from the OBC, and

identify the need and application of accessible design including the provisions of Universal Design within the OBC.

lecture

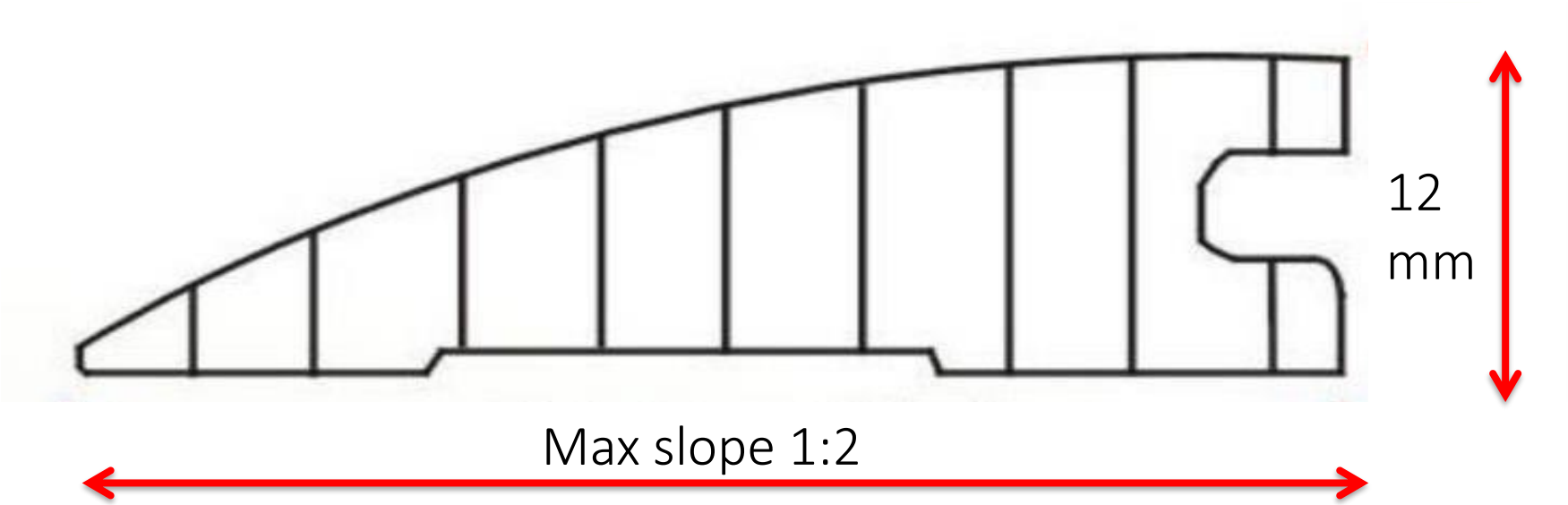
Unit 10:

Barrier-Free and Universal Design

3.8.1.1. Barrier-Free Application

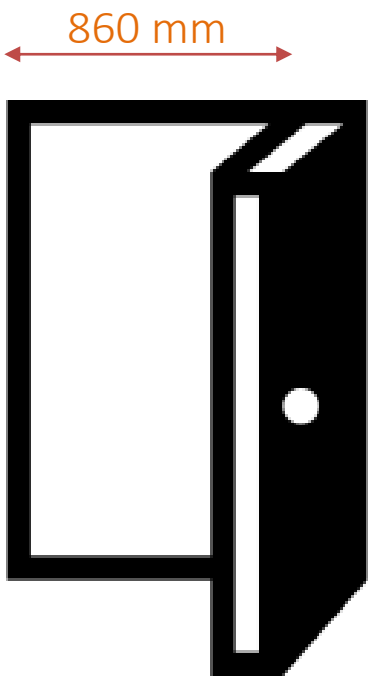
- Barrier-free path of travel required for all buildings (other than dwelling units, Group F-1, and pump houses, substations etc.)
- Not required for :
  - service rooms,
  - janitor rooms,
  - attic or roof spaces, or
  - floor levels w/o a passenger elevator
- This article applies to all new buildings and to additions and alterations to existing buildings, except for certain types of houses and Group F Division 1 high hazard industrial occupancies, plus those buildings that are not occupied on a regular basis.

3.8.1.3.(2) Thresholds



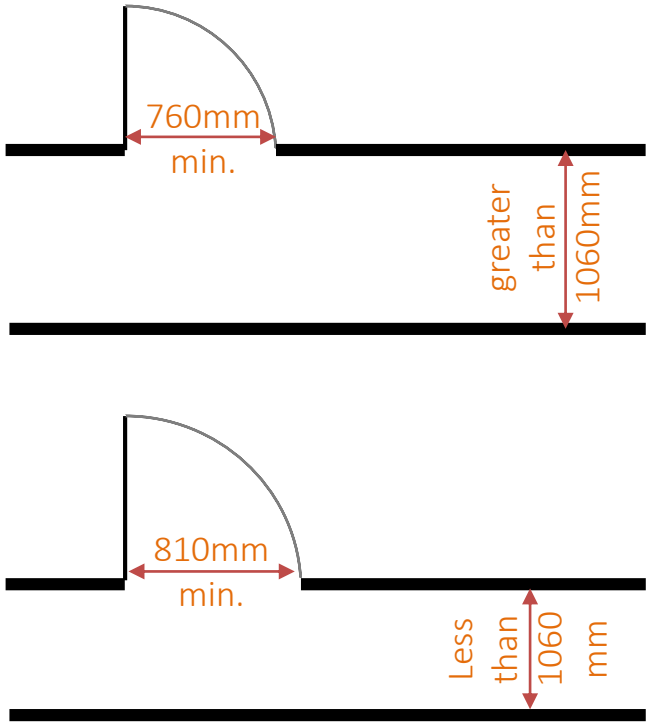
- The overall height of the threshold should not exceed 13 mm.
- Higher thresholds cannot be safely negotiated by mobility devices and can cause a tripping hazard for everyone.
- Any threshold that must be more than 13 mm high must be designed as a ramp or a sloped floor.

3.8.3.3. Accessible Doors



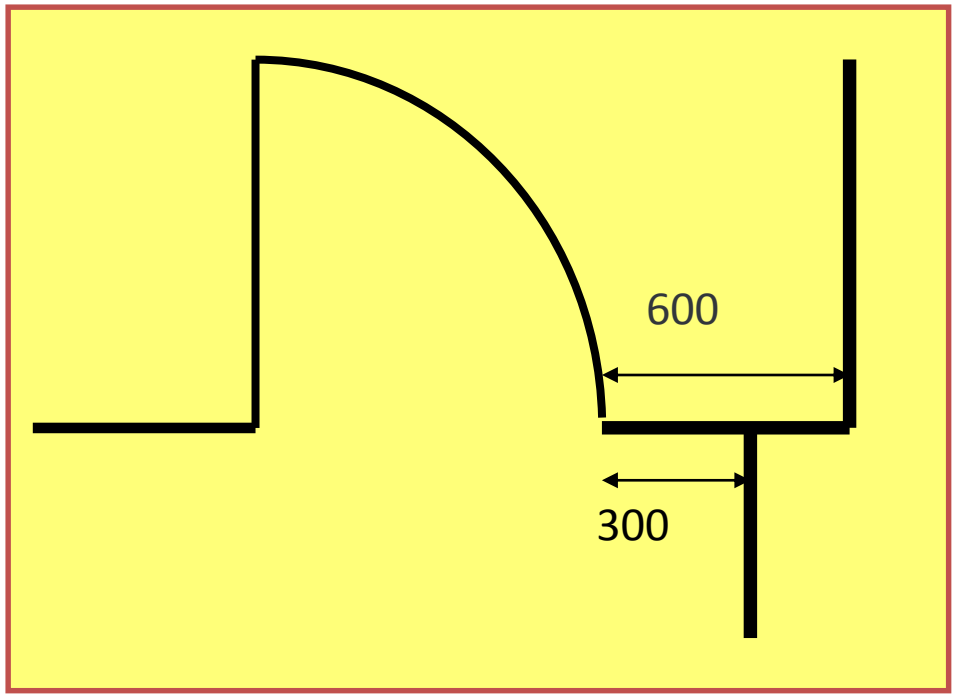
- Doors can be the biggest barrier when it comes to accessibility.
- All doors in a barrier-free path of travel must have a minimum clear width of 860 mm.
- The building code requires entrance doors for buildings to be equipped with power door operators to accommodate for all people, whether they have varying abilities, or are just holding a large parcel.

3.8.3.3. Residential Suite Doors



- All suites are required to have at least 760 mm clear width doors if served by a corridor more than 1060 mm in width.
- However, if the corridor is less than 1060 mm in width, 810 mm clear doors are required.

3.8.3.3.(10) Accessible Doors



- All doors in a barrier-free path of travel are required to have latch side clearances of:
  - 300 mm on the push side of the door, and
  - 600 mm on the pull side of the door.
- In locations where this requirement cannot be achieved, it is acceptable to provide a power door operator in lieu of latch side clearances.

3.8.3.3. Door Hardware

https://www.factorydirecthardware.com/images/D/al-avery1200ss-01.jpg

- All door hardware on doors forming part of an accessible path of travel must be the type that can be operated without requiring fine finger control, or twisting of the wrist.

3.8.3.3.(15) Vision Strips at Glazing

https://cdn-images-1.medium.com/max/1200/1*gLd8C4tHpbwOFDZil1c4EA.jpeg

- Where you have fully glazed doors or walls that could be mistaken for an accessible route, you must provide indication that there is a barrier.
- Many people with low vision cannot easily detect the location of glazed partitions.
- A vision strip that contrasts with the background will help to identify the location of this barrier.
- The vision strip must be
  - 50 mm in width and
  - located between 1350 mm and 1500 mm above finished floor.
- It could incorporate a logo or a symbol provided it does not diminish the opacity, width, colour and brightness of strip and maintains continuity.

3.8.3.3.(17) Power Door Operator

https://www.quadrangle.ca/images/default-source/blog-images/blog-image-buildingcode1.jpg?sfvrsn=0

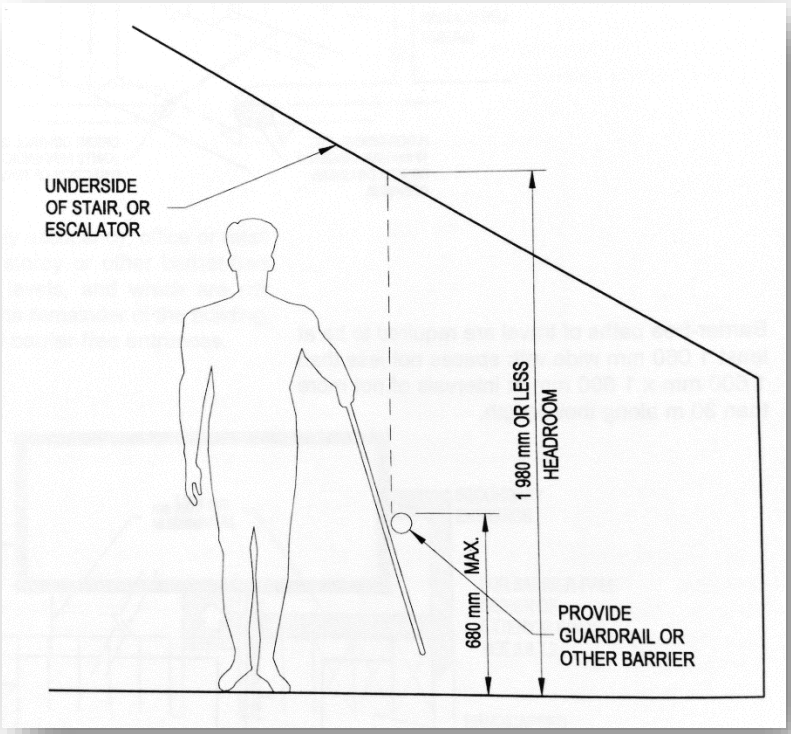
- Power door operators required to be provided must have a maximum face dimension of 100 mm, and must be installed between 1000 mm and 1100 mm above finished floor.
- The provision of an elongated power door operator, like the one shown on this slide, better accommodates for people with varying abilities and allows for the activation of the device by kicking or by pressing a mobility device up against the bottom.
- Power door operators must be installed not less than 600 mm beyond the door swing when the door opens towards the control, and must contain the international symbol for accessibility, which is the person seated in a mobility device.

3.8.3.4. Ramp Requirements

http://4.bp.blogspot.com/-g4IrzSPAhWs/UiGVtJeC9HI/AAAAAAAAFWA/WbKlMnROS8o/s1600/Barrier-Free-Ramps1.jpg

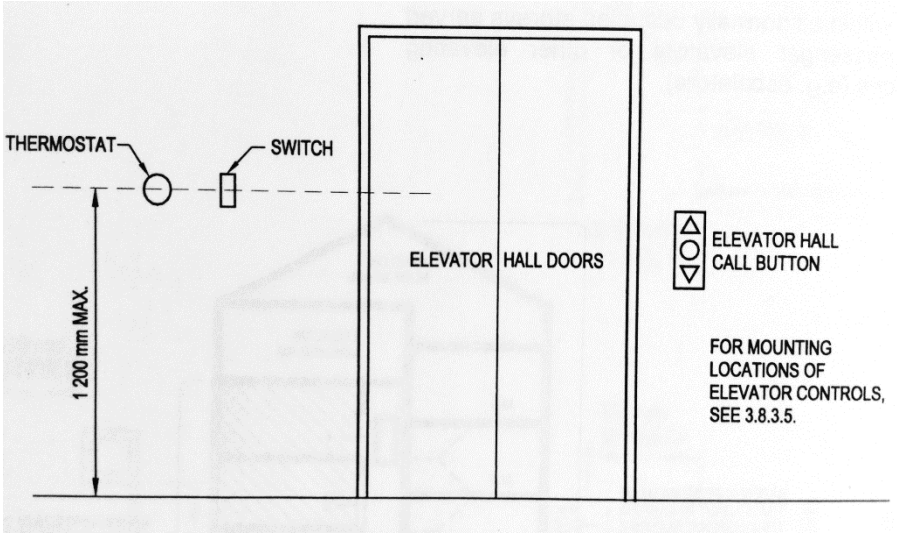
- Any accessible route steeper than 1:20 must be provided with a ramp.
- The ramp is required to have a maximum slope of 1:12, landings located at the top and bottom, as well as every 9 m of ramp.
- Handrails must be provided on both sides of the ramp, with handrail extensions of 300 mm at the top and bottom.
- Handrail extensions allow a person to firmly hold onto the handrail before they start moving up or down the ramp.

3.8.1.3.(5) Headroom



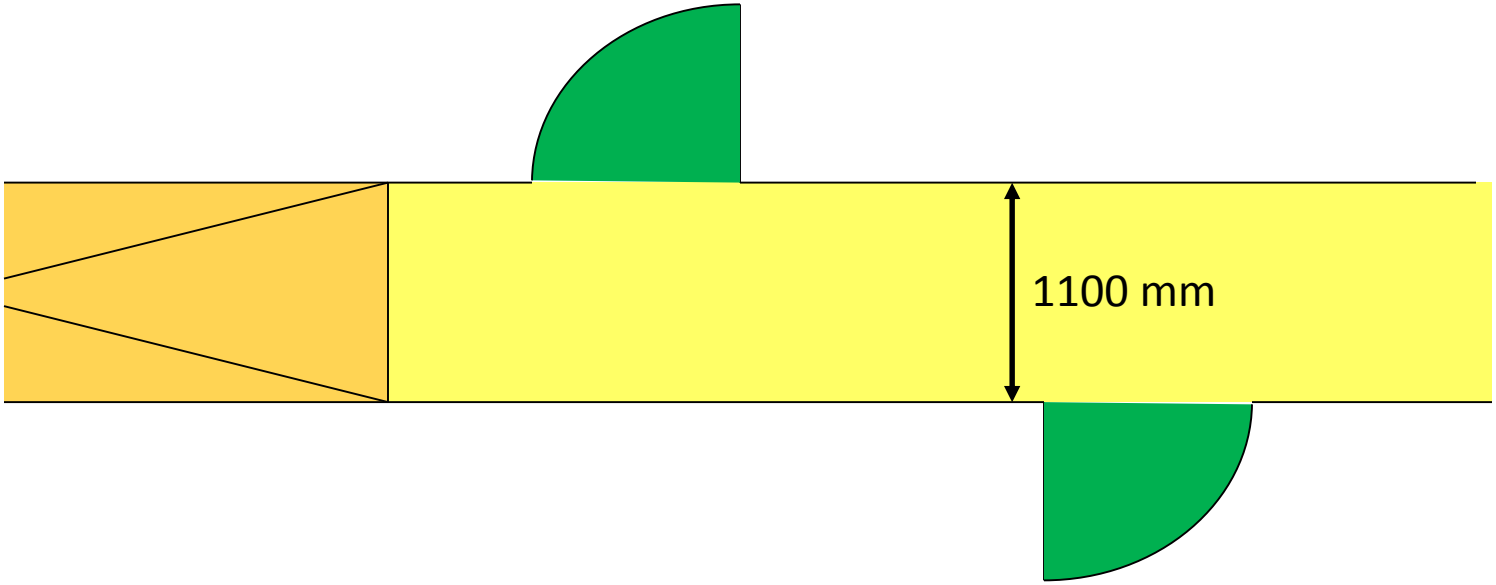
- In any location where the headroom is reduced to below 1980 mm, a cane detectable guard must be provided no higher than 680 mm above the floor, to assist persons with low vision and reduce the potential for persons hitting their heads.

3.8.1.5. Controls



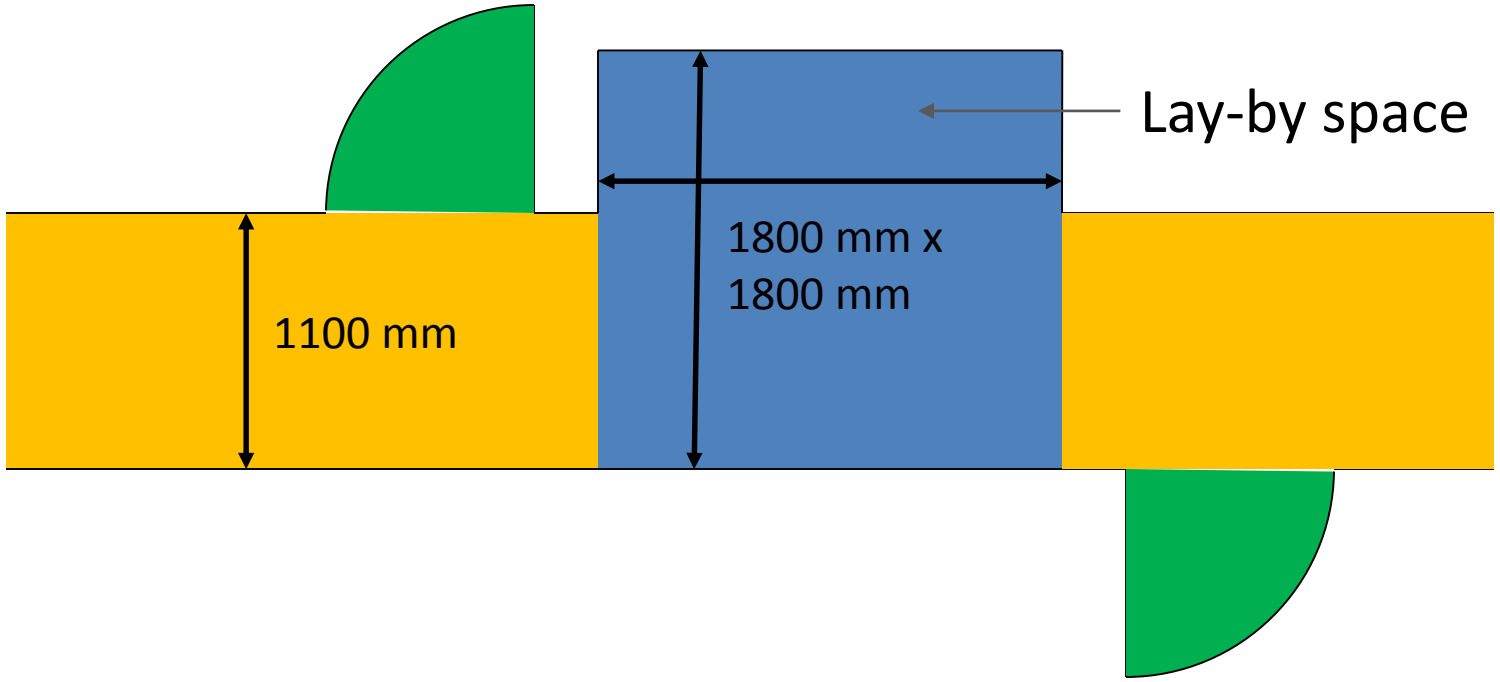
- All controls for a building must be provided between 900 mm and 1200 mm above finished floor.
- This will accommodate the largest percentage of people occupying our buildings.
- Shorter and taller people can activate a control that is located within this range, allowing for ease of use for everyone.

3.8.1.3. Corridor Width



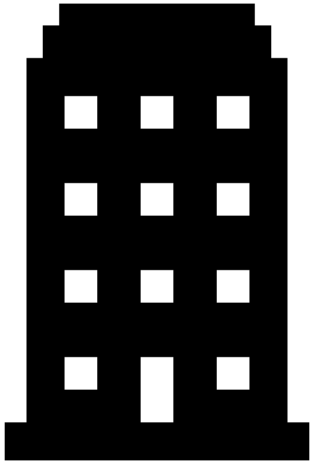
- The minimum width of a corridor is 1100 mm.
- A barrier-free path of travel must include ramps, elevators or sloped floors to overcome changes in level throughout a building.

3.8.1.3.(4) Lay-By Spaces



- Layby spaces are required every 30 m within a floor area to allow a person in a mobility device to turn around, or for a person in a mobility device to pass another person in a mobility device, or provide flexibility within the corridor for people to pass each other.

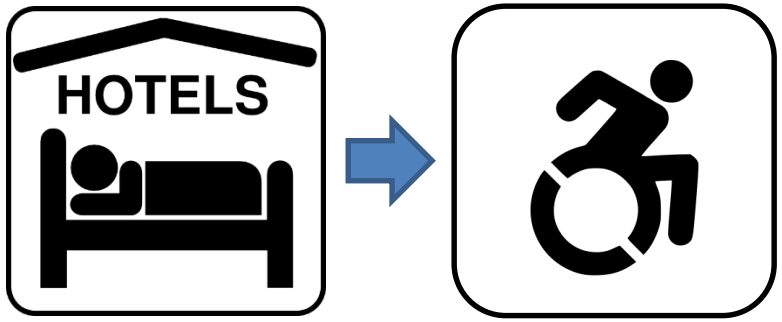
3.8.2.1.(5) Barrier-Free Suites



15%

- 15% of residential suites must be provided with a barrier-free path of travel to at least
  - one bedroom and
  - one bathroom on the same level as the entrance.
  - Kitchen or kitchen space
  - Living room or space
- The bathroom must have a minimum area of 4.5 m^2 and must be designed to have accessible doors to both the bedroom and bathroom.
- The bathroom also has to have a 1500mm turning radius and reinforcement in the wall for grab bars.
- You'll note that this is not called an Accessible Suite, as there are many other items that would be required to make this unit accessible.
- However, it does provide some flexibility in use of the space and allows a person in a mobility device the option to visit with someone who has a barrier-free style unit.

3.8.2.4. Hotels



10% of the suites but
Not more than 20 maximum

- 10% of the suites of a hotel need to have a barrier-free path of travel extending to the inside of each room, and onto a balcony
- They must be distributed among storeys that are required to have a barrier-free path of travel.
- However, not more than 20 suites need to be barrier free

Accessible Washroom Design

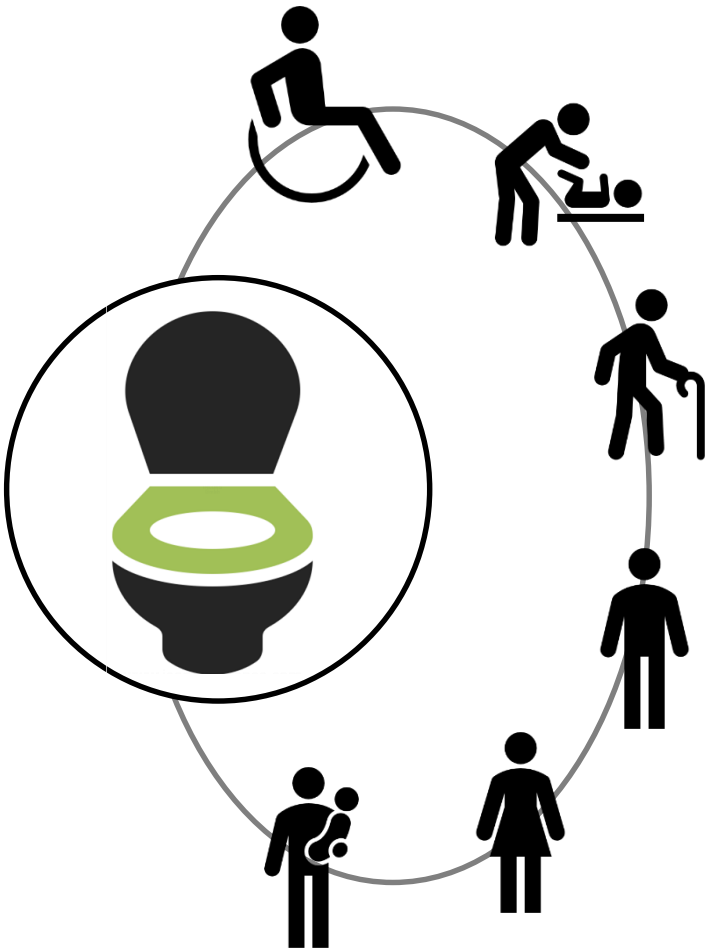
- A person's ability to function independently in the bathroom environment changes over time. Independence in the bathroom is minimal at a young age when children rely on parental assistance as they learn proper hygiene and bathroom practices.
- With advancing age, independence diminishes, requiring items such as grab bars and potentially assistance from care providers.
- Independence in the bathroom is based largely on functional ability; however, the environment plays an important role in determining the level of possible independence.
- Our building codes have a requirement to determine if a washroom is accessible or inaccessible, but they do not consider the complexity of person-behaviour-environment relationships.
- Some people will need more support than others, and sometimes it is only one detail that differs between independence and dependence.

Accessible Washroom Design

Washroom Fixture	Location of Requirement
Water Closet Stall	3.8.3.8.
Water Closet	3.8.3.9.
Urinals	3.8.3.10
Lavatories	3.8.3.11.
Universal Toilet Rooms	3.8.3.12.
Showers and Bathtubs	3.8.3.13.

- The Ontario Building Code identifies the minimum requirements to design accessible washroom facilities for new and extensively renovated buildings.
- Information on accessible washroom design begins at 3.8.3.8. and goes to 3.8.3.13.
- There are no requirements listed under 3.8.3.10. in the 2006 Ontario Building Code.
- This will be changed in the upcoming new Building Code as they are looking to provide accessible urinal requirements in this location.

Accessible Washroom Design



- Fixture placement in washrooms has been driven by plumbing, drain technologies and cost conservation, not by usability or human considerations.
- Even though a great number of technological and design improvements have been available, the washroom design has remained basically unchanged.
- When designed incorrectly, users are required to compromise convenience for efficient water supply and waste disposal.
- Washroom users today are vastly different from the users when the washroom originated back in the 1900's.
- They are a mixed population consisting of independent users, dependent users and care providers of dependent users.
- They are tall, short, young, old, large, small, and have varying abilities.
- The goal of an interior designer is to try to accommodate the greatest amount of people possible, knowing that it is not always possible to design for everyone all the time.

Ambulatory Water Closet Stall

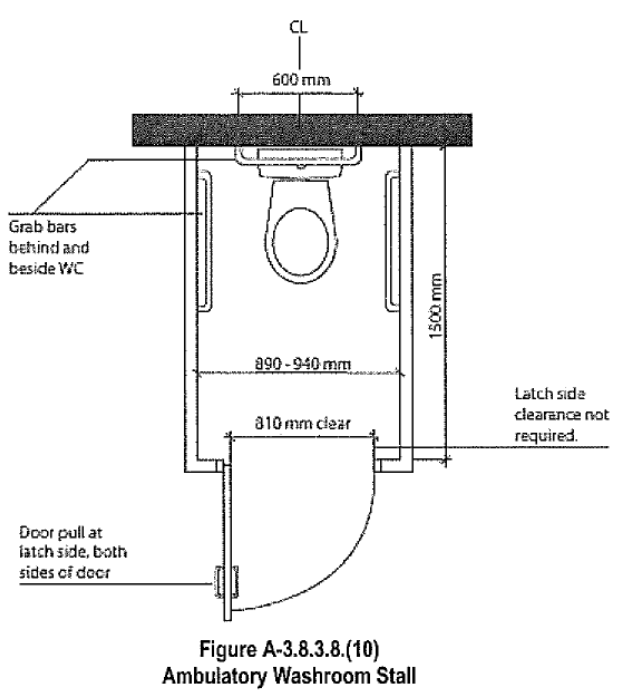

CL
600 mm
Grab bars behind and beside WC
1500 mm
890 - 940 mm
Latch side clearance not required.
810 mm clear
Door pull at latch side, both sides of door

Figure A-3.8.3.8.(10)
Ambulatory Washroom Stall

- An ambulatory water closet stall is designed to accommodate people requiring some mobility assistance such as canes or crutches but who do not use wheelchairs. Ambulatory stalls include features such as:
  - Higher water closet seat height
  - Grab bars
  - Some additional space for mobility aids.
- A door pull should be provided on both faces of the stall door.
- You cannot substitute the requirement of a barrier-free stall for an ambulatory stall.

3.8.3.8. Accessible Water Closet Stall

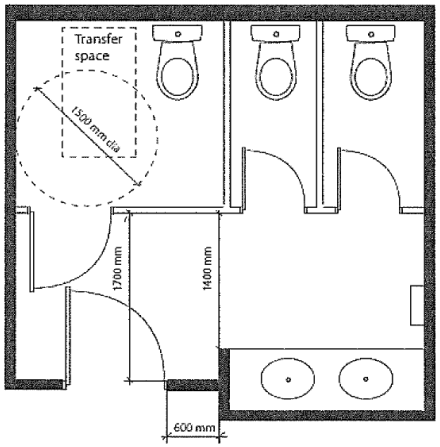
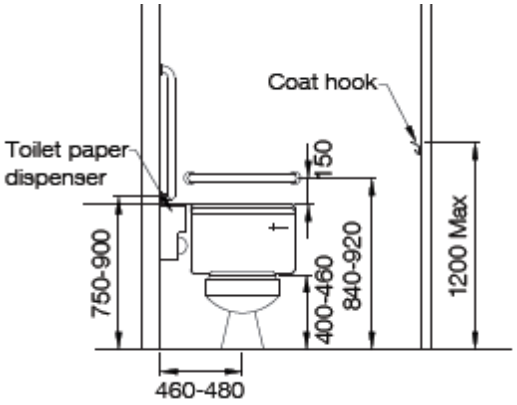


Figure A-3.8.3.8.(1)(f)
Washroom Clearances



There are specific requirements for an accessible water closet stall.

- You must provide at least one accessible water closet stall in every gender specific washroom constructed new or extensively renovated.
- The minimum dimension must accommodate a 1500 mm x 1500 mm turning radius.
- There is a door measuring at least 860 mm clear in width in the open position, swinging outward unless the door is lined up with the clear space of 820 x 1440mm adjacent to the water closet.
- 2 D-pulls on either side of the door, both located at maximum 900-1100 mm above finished floor.
- A coat hook is located at 1200mm above finished floor

Barrier-Free Design - Clearances

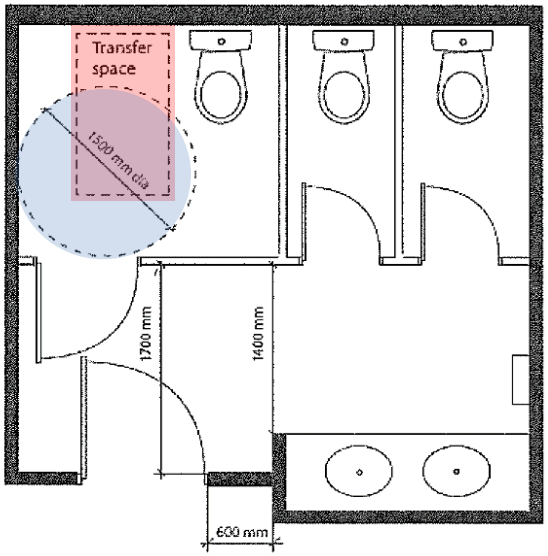


Figure A-3.8.3.8.(1)(f)
Washroom Clearances

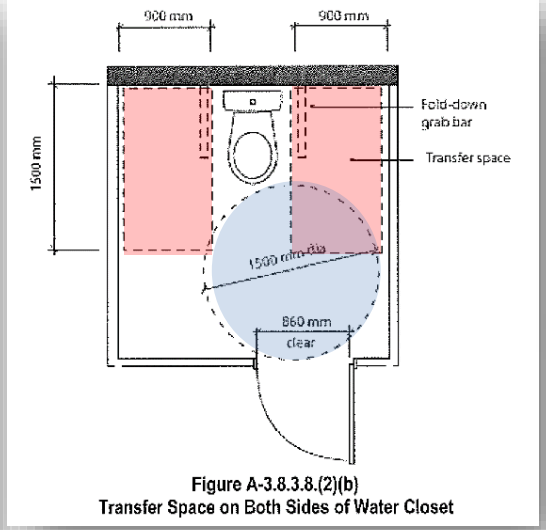
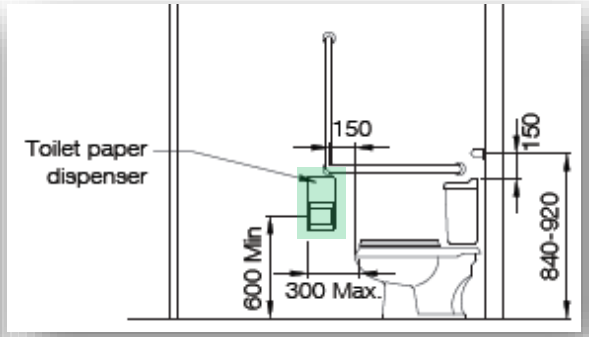


Figure A-3.8.3.8.(2)(b)
Transfer Space on Both Sides of Water Closet



- Accessible washroom stalls require a clear transfer space of 900x1500mm and a clear 1500mm turning radius within the stall or toilet room, as demonstrated.
- The water closet itself is positioned with it's centreline 460 to 480 mm from the adjacent wall.
- Two grab bars are provided; one behind the water closet, and an L-shaped grab bar beside the water closet.
- The toilet paper dispenser is located immediately underneath the L-shaped grab bar, but not more than 300 mm from the water closet.

Barrier-Free Grab Bars

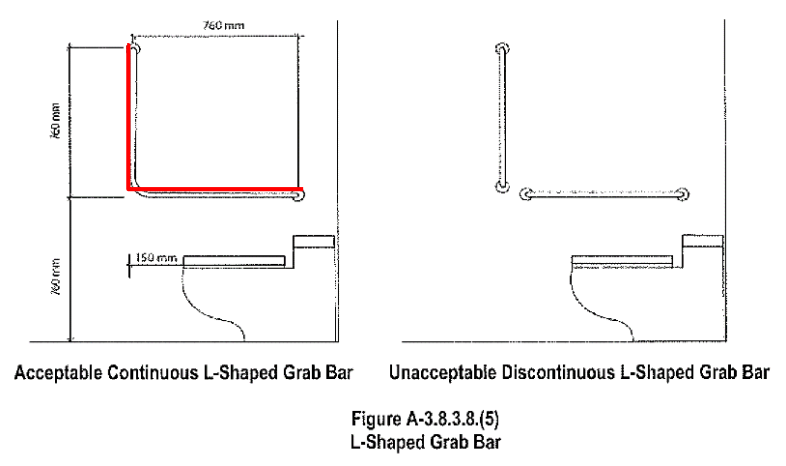
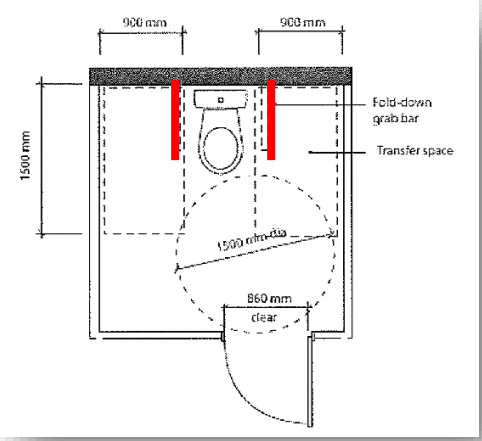
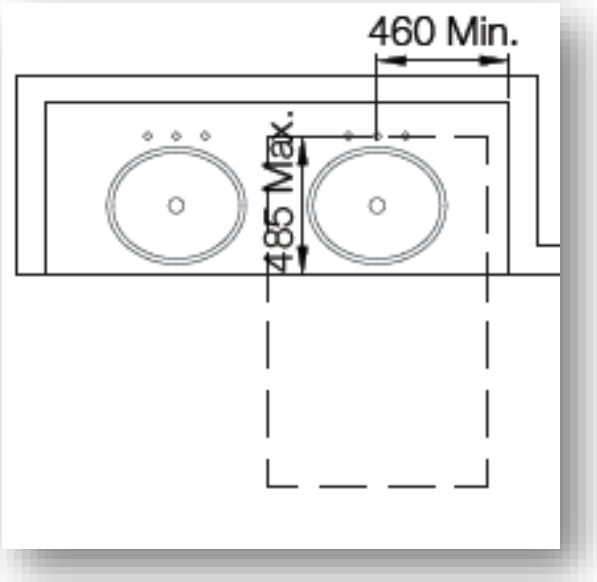


Figure A-3.8.3.8.(5)
L-Shaped Grab Bar



- Grab bars are to be located on the wall beside the water closet and also behind.
- Fold down grab bars are also acceptable.
- L-shaped grab bars provide greater support for people who rely on grab bars to assist them in transferring to and from a standing or seated position.
- Diagonally mounted grab bars are not suitable for the downward force necessary for support or pulling upward.
- Hands can slip along the bar if it is set in a diagonal position.
- The use of 2 straight grab bars located at 90 degree angle to one another is also not acceptable.

3.8.3.11. Accessible Lavatory



Accessible lavatories have many requirements.

- When installing an accessible lavatory, consideration must be given to the clear knee space below, and the provision of all other hand washing elements such as locations of soap dispensers, faucets and hand dryers or towels.
- The lavatory must be at least 460 mm away from the wall.
- Ensure that the lavatory itself is not more than 485 mm from the front of the counter.
- All the appropriate heights of fixtures must be followed such as not installed anything higher than 1200 mm, although it is recommended that 900 mm is a more accessible height.

Accessible Lavatory Clearances

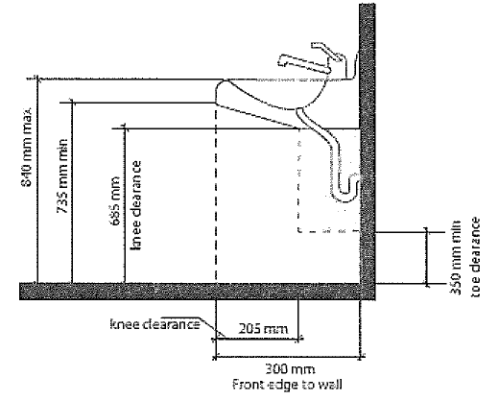
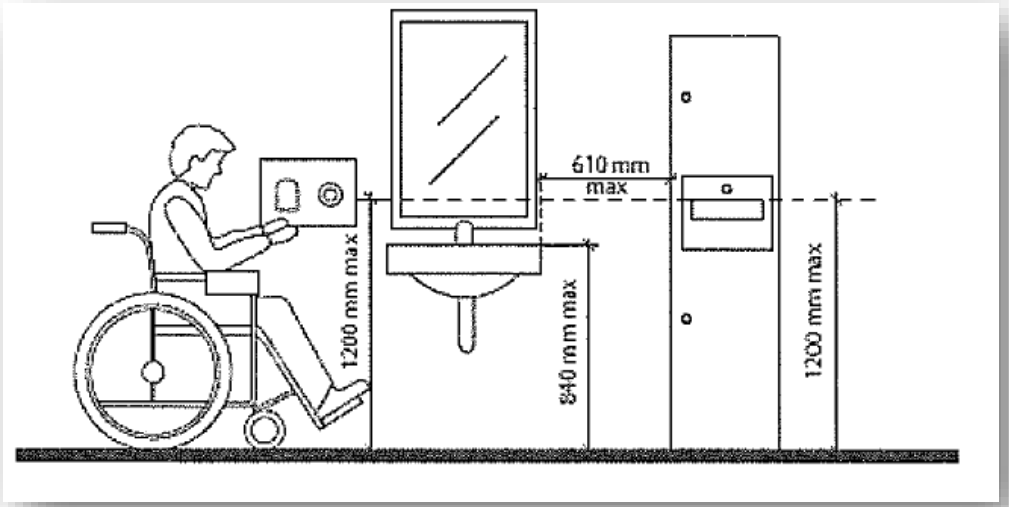


Figure A-3.8.3.11.(1)(c)
Clearances Beneath a Lavatory



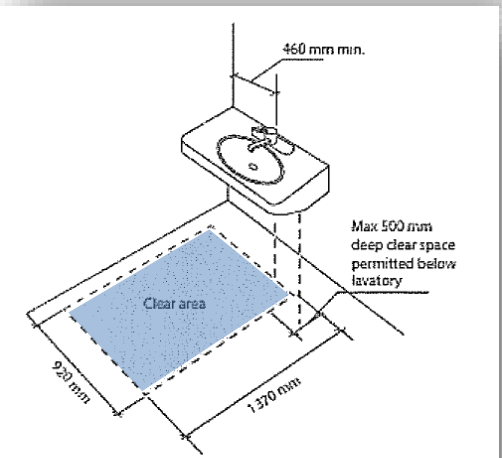
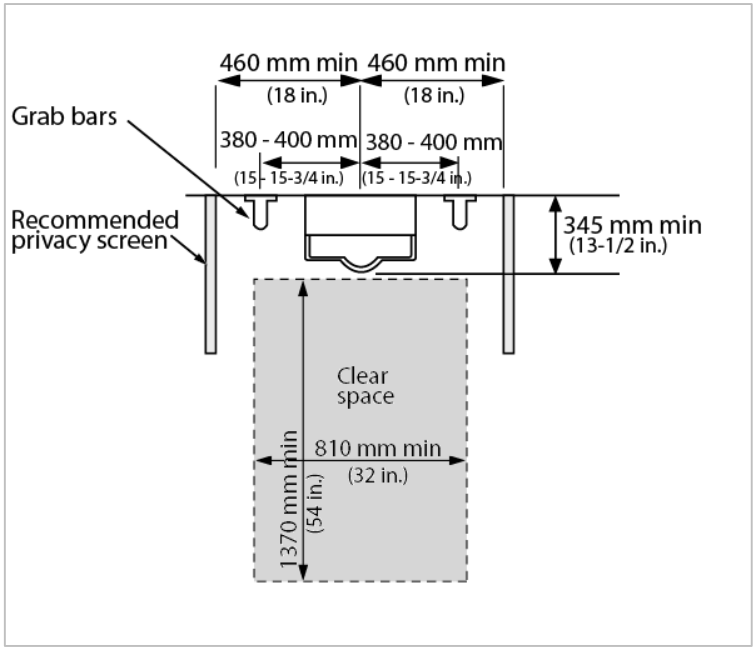


Figure A-3.8.3.11.(1)(f)
Clear Space at Lavatory

- You also want to ensure that you are selecting a lavatory that will provide the appropriate knee clearances.
- Use this as a guide when determining if the lavatory you're selecting will be appropriate for accessibility purposes.
- There are many new shallow lavatories that are beautiful and also meet the accessibility requirements.
- Barrier-free lavatories require sufficient knee and toe clearance below to permit a person in a wheelchair to move close enough to the faucet to easily access the water stream
- The clear space required for the wheelchair user to pull into the fountain may overlap with an adjacent barrier-free path of travel but should not prevent other building users from passing when the barrier-free lavatory is in use.

3.8.3.10 Accessible Urinal



http://www7.mississauga.ca/Departments/Marketing/Websites/Accessibility/images/Figure.4.2.5.1.png

- Where you have urinals, you need to design one to be accessible.
- The only thing that differs between a standard urinal and an accessible urinal is the placement of the urinal itself and the installation of grab bars.
- The urinal must be no higher than 430mm above finished floor or floor mounted.
- It can not have more than a depth of 345mm
- Two grab bars must be installed on either side of the urinal,
  - Not less than 300mm
  - Mounted not less than 380 mm and not more than 450 mm measured horizontally from the vertical centre line of the urinal
  - With a centreline of 1000mm.
- If you provide dividers, you must have a minimum clear width of 920 mm between barriers.

3.8.3.13. Showers and Bathtubs

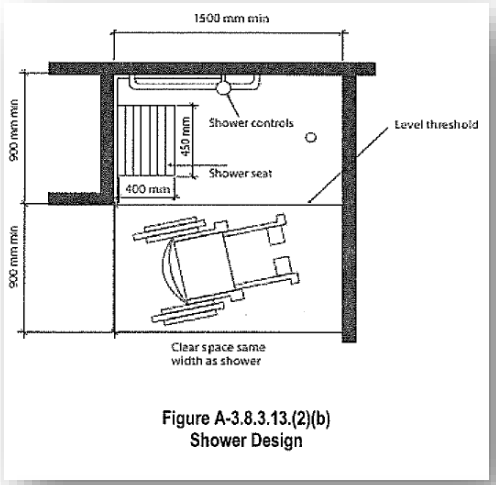


Figure A-3.8.3.13.(2)(b)
Shower Design

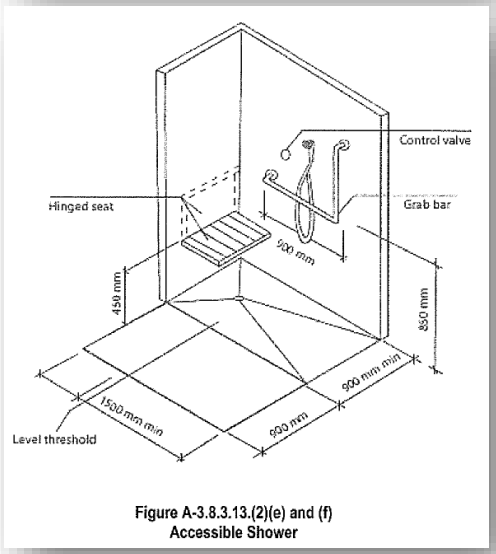
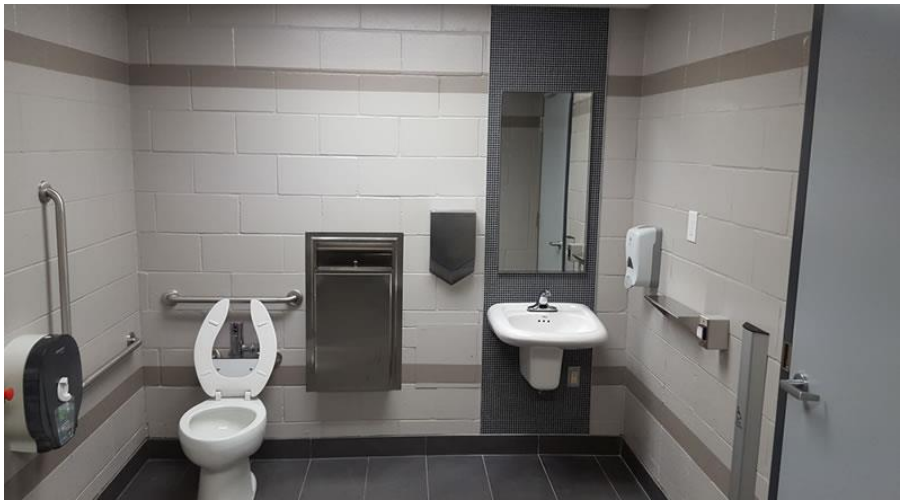


Figure A-3.8.3.13.(2)(e) and (f)
Accessible Shower

- Accessible roll in showers are regulated in 3.8.3.13. of the OBC.
- They require the provision of a clear floor space within the shower of 900 mm by 1500 mm, as well as the same clear floor area outside of the shower.
- Shower controls must be installed along the back wall of the shower and within reach of the required shower seat.
- Grab bars will be provided to assist a person with transferring to the shower facility and for assistance as required throughout bathing.
- Accessible bathtubs are similar to “standard bathtubs” but allow for safety by the provision of grab bars and slip resistance.

3.8.3.12. Universal Washroom



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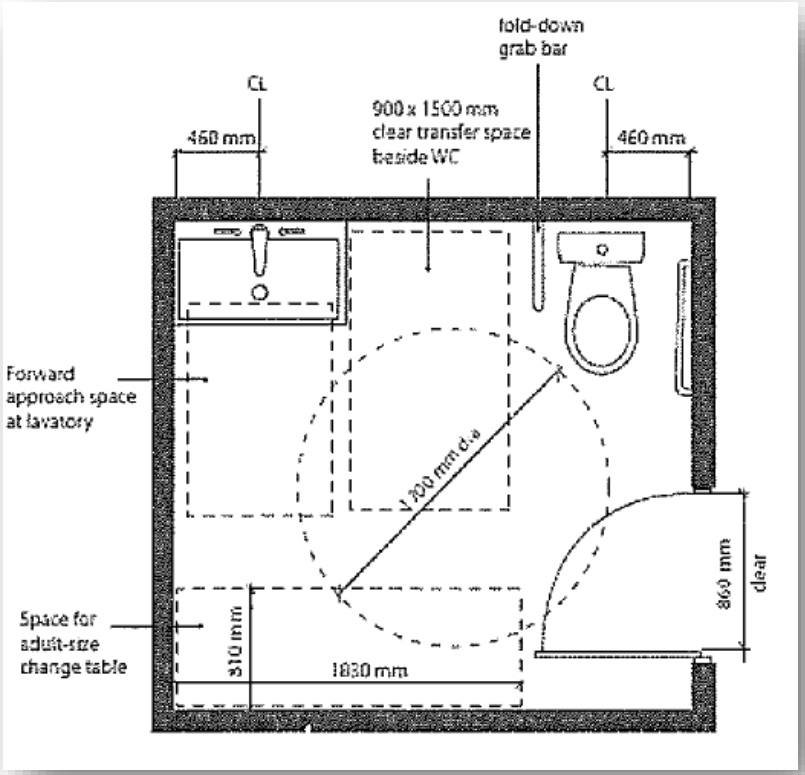
A universal washroom is an equal opportunity environment. It should benefit all users and meet their individual and collective needs. Universal washrooms should be for all people, offer consumer acceptance by everyone, consider the range of users and provide choices for different needs while accommodating everyone at all times.

- Current washrooms continue to primarily support independent users because they are based on the premise that all users will operate independently.
- A universal washroom is an equal opportunity environment that is intended to benefit all users and meet their individual and collective needs.
- Universal bathrooms are not the same as “barrier-free” bathrooms as these terms primarily refer to bathrooms with special design features that accommodate people who use mobility devices, separately from those who do not use mobility devices.
- Universal washrooms consider the range of users and supports the idea of individualization by the provision of adaptability or adjustability.

3.8.3.12. Universal Toilet Room



- A universal toilet room should have
  - a minimum dimension of 1700 mm x 1700 mm, and
  - accommodate a clear turning circle of at least 1700 mm.
- Fixtures should be placed to allow a person in a mobility device the option to either back in beside the water closet, or transfer from the front of the w/c.
- If the door swings outward, a power door operator must be provided. It is recommend to install a power door operator on the door either way, if budget allows.
- The requirements for the lavatory, grab bars and water closet are found in the barrier-free requirements already addressed.
- You must use all the OBC requirements for washrooms to create one universal toilet room.

Door Requirements

https://www.quadrangle.ca/images/default-source/blog-images/blog-image-buildingcode1.jpg?sfvrsn=0

- Here are some best practice guidelines on creating accessible washroom facilities that meet the needs of all people.
- Doors must be wide enough for easy passage. Narrow doors often force people using mobility devices to leave the device outside the washroom, compromising safety or making assistance necessary.
  - Minimum clear width of 860 mm (Preferred 915 mm clear width)
- Door weight is a safety issue. Heavy doors require more force to open or close and can be difficult to use without assistance.
  - Maximum weight of door 22 N
- Lever handle door latches make opening the latch easier to operate, and install elongated power door operators where possible within the budget.
- Elongated power door operators

Safety Requirements

http://img.archiexpo.com/images_ae/photo-g/125525-5997213.jpg

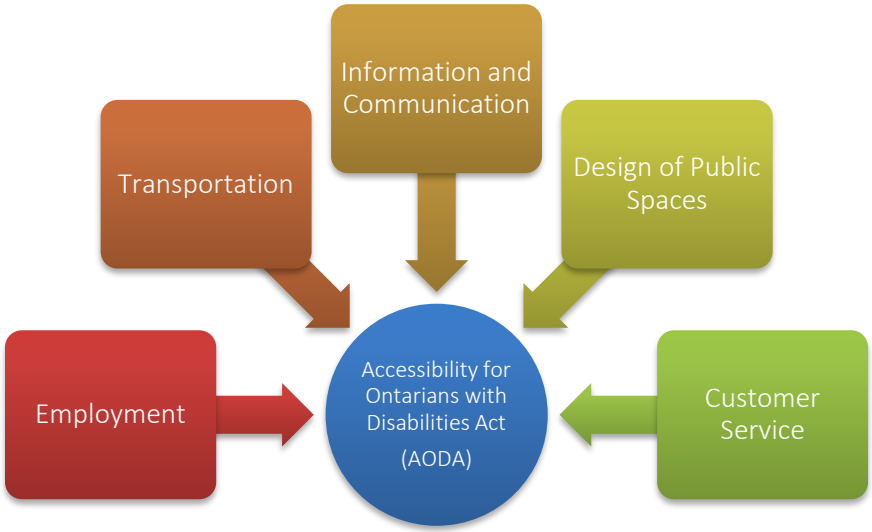
- Eliminate protruding objects such as hand dryers; recess fixtures or build them into the wall.
- Round all edges and soften all corners to prevent a person from hurting themselves
- Provide a non slip floor surface to prevent chances of a fall
- Provide appropriate lighting with overhead and task lighting as required

Usability Requirements

http://www.buildings.com/Portals/0/images/Sponsored%20Articles/Chicago_Faucets_1.jpg

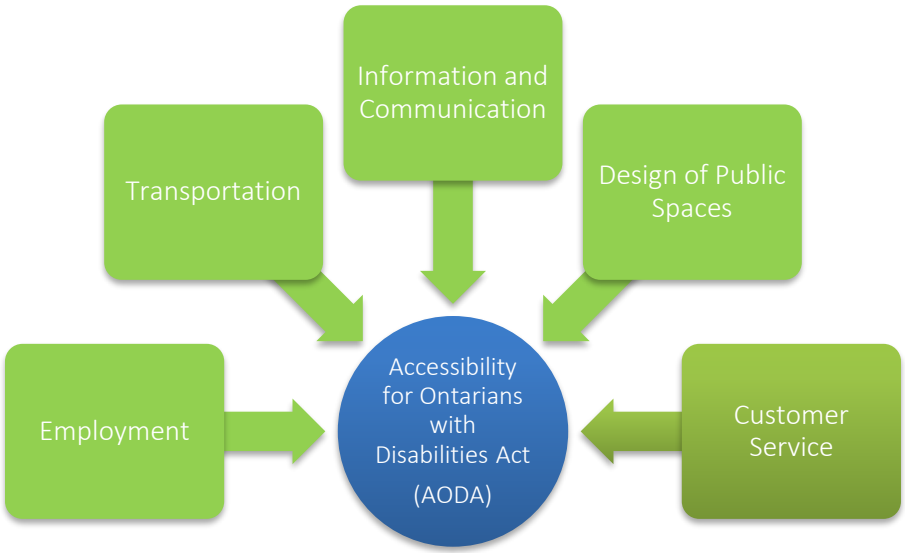
- Incorporate fixtures that are usable by all users. This will create an inclusive washroom.
- Install fixtures that respond to the expectation of the user; fixtures provide a good match between user capabilities and usability requirements such as automatic faucet controls.
- Incorporate simple to operate fixtures, eliminate the need to learn new technology.
- Include easy to understand designs; fixture designs should have built in cues for use.
- For example, flush controls can be placed in various locations.
- Intuitive design would identify the location of flush controls without requiring the user to search for it.

AODA Legislation



- Currently in Ontario, we have seen the legislation of the Accessibility for Ontarians with Disabilities Act, or AODA.
- This began in 2005, with the goal of eliminating barriers to persons with varying abilities in the province of Ontario by 2025.
- The first standard to come out was the Customer Service Standard.
- Accessible customer service is not about ramps or automatic door openers.
  - It's about understanding that people with disabilities may have different needs. It can be as easy as asking "How can I help?" and making small changes to how you serve customers with disabilities.
  - Every company with more than one employee was required to train staff on how to accommodate for all customers, and provide a report indicating that they did train all staff.
- Other standards that have followed include:
  - Employment,
  - Transportation,
  - Information and Communication
  - Design of Public Spaces

AODA Legislation



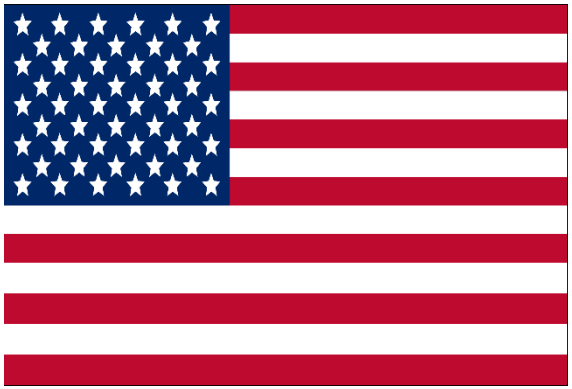
- The integrated accessibility regulation standard holds the remaining four portions of the AODA all in one comprehensive standard.
- Those highlighted in green are all included in one document.
- In the design industry, we often refer to the Accessibility Standards for the Built Environment that focuses on removing barriers in two areas:
  - public spaces, and
  - buildings.
- Enhancements to accessibility in buildings will happen at a later date through Ontario's Building Code, which governs new construction and renovations in buildings.
- The AODA is regulating only public spaces classified under the Design of Public Spaces, which became legislation on January 1st, 2013.

Design of Public Spaces Standard

https://www.quadrangle.ca/images/default-source/projects/Pan-Am-and-Parapan-Am-Venues/11054-09.jpg?sfvrsn=2

- The standard for the design of public spaces **only** applies to new construction and major changes to existing features.
- Here are the highlights of what the standard covers:
  - Recreational trails/beach access routes
  - Outdoor public eating areas like rest stops or picnic areas
  - Outdoor play spaces, like playgrounds in provincial parks and local communities
  - Outdoor paths of travel, like sidewalks, ramps, stairs, curb ramps, rest areas and accessible pedestrian signals
  - Accessible parking (on and off street)
  - Service-related elements like service counters, fixed queuing lines and waiting areas
  - Maintenance and restoration of public spaces
- The majority of aspects forming part of the Design of Public Spaces Standard are outside of a building.
- However, items such as service counters and waiting areas could be found within a building and must now be designed to be accessible.

The Future of Accessibility in Canada



- Many provinces were looking to Ontario to see how accessibility legislation was rolled out to the public and are in the process of developing their own accessibility legislation.
- We see provinces such as Saskatchewan and Manitoba moving forward to help persons with disabilities living and visiting these provinces.
- Countries such as the USA have had policies, procedures and design requirements for people with disabilities regulating the construction and training of all people since 1990.
- We as a country are far behind on accommodating those who may have varying abilities.
- It is time to step up and do the right thing for everyone to be able to fully enjoy and participate in the spaces we design.

handouts

OBC - New Accessibility Standards.
&
Oshawa Barrier Free Washroom Requirements

readings

Required Reading

Government of Ontario. (2012). *Ontario Building Code 2012*. Retrieved from https://www.ontario.ca/laws/regulation/120332

Table of Contents

Division A – 1.4.1.2.

Division B – 3.8

Optional Reading

Government of Ontario. (2005). *Accessibility for Ontarians with Disabilities Act*. Retrieved from https://www.ontario.ca/laws/statute/05a11

assignments

ONGOING

Assignment 2: Plumbing Fixtures, Barrier-Free, and Universal Design

Due no later than 11:59 p.m. ET on Day 5 of Unit 13

Worth 15% of final grade

discussion

You are designing a small take out restaurant space that requires one washroom per sex and your client is trying to maximize the patron space for more seating. You have designed one universal washroom and one regular washroom stall, both unisex, meeting the requirements of the OBC. She has reviewed your plans and would like to remove the Universal Washroom from your space plan and place in 2 – regular washrooms. Can you meet the client's request? Why or why not? Explain your answer by referencing the OBC.